REMARKS

Claims 4-17 and 58-61 are all of the claims presently pending in the application. Claims 4, 5, 7, 9, 11, 12, 14, 16 and 58-60 have been amended to more particularly define the invention. Claim 61 has been added to claim additional features of the invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 58-60 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claims 4-13 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Takeuchi et al. (U.S. Patent No. 5,239,188) (hereinafter "Takeuchi"). Claims 14-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takeuchi.

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e.g., as defined by claim 4) is directed to a group III nitride compound semiconductor. The semiconductor includes a substrate, a buffer layer formed on the substrate into an island pattern having any of a dot pattern, a striped pattern, and a grid pattern such that substrate-exposed portions are formed in a scattered manner, a first group III nitride compound semiconductor layer $Al_{x1}Ga_{y1}In_{1-x1-y1}N$ formed on said buffer layer, a second group III nitride compound semiconductor layer $Al_{x2}Ga_{y2}In_{1-x2-y2}N$ which causes epitaxial growth from at least an island of the first group III nitride compound semiconductor serving as nuclei so that the second group III nitride compound semiconductor keeps an empty gap to the substrate-exposed portions and connects adjacent ones of the first group III nitride compound semiconductor, and a device layer made of gallium nitride group compound semiconductor formed on the second group III nitride compound semiconductor layer.

Conventional gallium nitride group compound semiconductors are direct-transition type semiconductors having a wide emissions spectrum range from ultraviolet to red, and is applied to light emitting devices such as light-emitting diodes and laser diodes. The gallium nitride group compound semiconductor is generally formed on a sapphire substrate. When a layer of gallium nitride group compound semiconductor is formed on a sapphire substrate, however, cracking and warpage usually occurs in the semiconductor layer due to a difference in thermal coefficient between sapphire and the gallium nitride group compound semiconductor and dislocations are generated in the semiconductor layer due to misfit, resulting in degraded device characteristics.

The claimed invention of exemplary claim 4, on the other hand, provides a group III nitride compound including a second group III nitride compound semiconductor layer which causes epitaxial growth from at least an island of the first group III nitride compound semiconductor serving as nuclei so that the second group III nitride compound semiconductor keeps an empty gap to the substrate-exposed portions and connects adjacent ones of the first group III nitride compound semiconductor (e.g., see Application at Figure 2A). This combination of features provides a layer of a gallium nitride group compound semiconductor without cracks and dislocations to thereby improve device characteristics (see Application at page 2, lines 10-14).

II. 35 U.S.C. § 112, FIRST PARAGRAPH, REJECTION

Claims 58-60 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Applicant has amended the claims to overcome this rejection.

Specifically, Applicant has amended claims 58-60 to replace the term "thickness" with the term "width". Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

III. THE PRIOR ART REFERENCE

The Examiner alleges that Takeuchi teaches the claimed invention of claims 4-13. Furthermore, the Examiner alleges that the claimed invention of claims 14-17 would be obvious in view of Takeuchi. Applicant submits, however, that there are elements of the claimed invention which are neither taught nor suggested by Takeuchi.

That is, Takeuchi does not teach or suggest that "*said second group III nitride compound semiconductor keeps an empty gap to said substrate-exposed portions*" as recited in claim 4 (and similarly recited in claims 5, 7, 9, 11-12, 14 and 16).

The novel features of the claimed invention are not taught or suggested by Takeuchi. The Examiner attempts to rely on Figures 4A-4D and 5, and column 6, lines 5-56 of Takeuchi to support his allegations. The Examiner, however, is clearly incorrect.

Nowhere in these Figures nor this passage (nor anywhere else for that matter) does Takeuchi teach or suggest a second group III nitride compound semiconductor layer which causes epitaxial growth from at least an island of the first group III nitride compound semiconductor serving as nuclei so that the second group III nitride compound semiconductor keeps an empty gap to the substrate-exposed portions. In fact, the Examiner does not even allege that Takeuchi teaches or suggests that the second group III nitride compound semiconductor keeps an empty gap to the substrate-exposed portions. In fact, the Examiner states that "said second group III nitride compound semiconductor keeps a gap (the gap is filled by buffer patterns 2)" (e.g., see Office Action at page 4, lines 7-9).

Takeuchi teaches that the gap is filled with semiconductor. That is, Takeuchi teaches that the GaN layer 3 exists between the intermediate layer 2 and the Mg-doped GaN layer 4 (see Application at column 4, lines 47-56). The GaN layer 3 contacts the substrate electrically.

In contrast, the claimed invention discloses that the gap which exists between the second Group III nitride compound semiconductor and the substrate is not filled with semiconductor. Accordingly, the second Group III nitride compound semiconductor does not contact the substrate.

Because the second Group III nitride compound semiconductor has an empty gap between the substrate, no stress is applied to the second Group III nitride compound semiconductor. As a result, crystallinity of the second Group III nitride compound semiconductor can be improved.

Therefore, Applicant submits that there are elements of the claimed invention that are not taught or suggest by Takeuchi. Therefore, the Examiner is respectfully requested to withdraw this rejection.

IV. NEW CLAIM

New claim 61 has been added to provide more varied protection for the claimed invention and to claim additional features of the invention. This claim is independently patentable because of the novel features recited therein.

Applicant respectfully submits that new claim 61 is patentable over any combination of the applied references at least for analogous reasons to those set forth above with respect to claims 4-17 and 58-60.

V. FORMAL MATTERS AND CONCLUSION

In response to the Examiner's statements regarding Applicant's claim to foreign priority, Applicant respectfully submits that a claim to foreign priority was not made in this Application. As clearly indicated on the Declaration filed on October 15, 2003 in the present Application, Applicant submitted a Prior Foreign Application (JP 322132/1997), however, Applicant clearly indicated that a priority claim was not being made. Furthermore, Applicant clearly indicated in the Declaration filed on March 20, 2003 in application serial number 10/391,648 that a claim to foreign priority was not being made.

Also, Applicant requests the Examiner to initial and return the PTO-1449 Form filed with the original Application. For the Examiner's convenience, a copy of the PTO-1449 Form, which was filed on October 15, 2003 is included herewith.

In view of the foregoing, Applicant submits that claims 4-17 and 58-61, all of the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

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